



## Psychological distress in critically ill patients: Risk and protective factors

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**Abstract:** Despite the importance of patients' psychological well-being in their own recovery from illness, few studies examine these issues while the patient is still in ICU. This study analyzes the psychological distress of 71 ICU patients and the potential risk/protective factors for such distress. Patients showed moderate anxiety and depression although in a significant percentage clinical symptomatology was observed. More than half of the patients revealed an intermediate general stress level and the most important stressor was having pain. Regarding risk factors for psychological distress, being a woman increased the risk for anxiety, depression and stress. Being a septic patient also increased the risk of experiencing stress. Conversely, some protective factors were being married and younger. These data provide a landscape of the distress experienced by patients while they are still in ICU, which is important to optimize the attention provided in a context where time for intervention is rather limited.

**Keywords:** Critically ill patients; psychological distress; risk factors; protective factors.

### Afectación emocional en pacientes críticos: Factores de riesgo y de protección

**Resumen:** A pesar de la importancia del bienestar psicológico del paciente en su recuperación, pocos estudios analizan estos aspectos mientras el paciente está todavía en UCI. Este estudio analiza la afectación emocional de 71 pacientes críticos y factores de riesgo/protección para dicha afectación. Los pacientes mostraron síntomas de ansiedad/depresión moderados, aunque un porcentaje significativo mostró sintomatología clínica. Más de la mitad de los pacientes reveló un nivel de estrés intermedio y el estresor más importante fue tener dolor. Asimismo, ser mujer aumentó el riesgo de ansiedad, depresión y estrés. Ser paciente séptico incrementó el riesgo de experimentar estrés. Por el contrario, algunos factores protectores fueron estar casado y ser más joven. Estos datos proporcionan un panorama general del malestar experimentado por los pacientes mientras están en UCI, lo cual es importante para optimizar la atención de los pacientes en un contexto en el que el tiempo para intervenir es bastante escaso.

**Palabras clave:** Pacientes críticamente enfermos; malestar emocional; factores de riesgo; factores protectores.

Recibido: 14 de diciembre 2019; aceptado: 17 de marzo 2020

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*Funding.* This work was supported by a predoctoral fellowship from the Generalitat Valenciana, Spain (BFPI/2008/129) and the Ministry of Education and Science of Spain (PSI2008-01642/PSIC).

*Acknowledgments.* We thank the patients and ICU professional team their special collaboration in the present study.

### Introduction

Advances in technology and critical care medicine make the intensive care unit (ICU) one of the most sophisticated areas in the hospital (Backes, Erdmann, & Büscher, 2015; Wikström, 2003). The admission to an ICU can be considered as a strange and hostile experience for patients, especially the first time, given

its specific characteristics (Llubià & Canet, 2000), such as the high technology used for patients' monitoring and care, the limited autonomy and the medical severity of patients, which is associated with fear of suffering and death. Some authors describe this situation as chaotic (Engström, Rogmalm, Marklund, & Wälivaara, 2015).

The critical care has succeeded in restoring critical health status of patients even in extreme conditions but just preventing mortality should not be considered enough for an optimal outcome in an ICU stay (Hashmi, Han, & Demla, 2017). As advances in critical care medicine decrease mortality, patient-centred outcomes such as emotional well-being are of increasing importance (Needham, Feldman, & Kho, 2011) because of the suffering and emotional distress experienced by critically ill patients not only on short but also on long term (Curtis, 2003; Garrouste-Orgeas et al., 2012; Martin, & Badeaux, 2018) being impaired their quality of life (Hashmi et al., 2017).

In an ICU, diverse stressors may converge —e.g. impaired ability to communicate, complete dependence on others, pain, having tubes in the nose and mouth, sleeping problems, noise, lights, etc. (Ballester et al., 2006; Dias, Resende, & Diniz, 2015; Ding, Redeker, Pisani, Yaggi, & Knauert, 2017; Granja et al., 2005; Hweidi, & Nizamli, 2015; Kalfon et al., 2017)— along with important needs —e.g. knowing, regaining control, hoping, and trusting—feeling safe (Hupcey, 2000)— not always met. All with this, it is hardly surprising that critically ill patients may experience a wide variety of psychological symptoms. Studies show as the most frequent symptoms fear, anxiety, depression, mild/severe psychosis with hallucinations and sleep disturbances (Choi, Tate, Rogers, Donahoe, & Hoffman, 2016; Davydow, Gifford, Desai, Bienvenu, & Needham, 2009; Gómez-Carretero, Monsalve, Soriano, & De Andrés, 2007; Hatch et al., 2018; Hewitt, 2002; Milton, Bruck, Schandl, Bottai, & Sackey, 2017).

Despite the importance of patients' psychological well-being in their own recovery from illness, there are very few studies examining these issues while the patient is still in ICU (Li, & Puntillo, 2006; Rincon et al., 2001) and especially studies considering risk or protective factors for experiencing psychological symptoms.

The aim of this study is to analyse the psychological distress of ICU patients during the period of admission to the ICU in terms of anxiety, depression, subjective perception and stress, as well as to identify potential risk and protective factors for psychological distress.

## Method

It is a descriptive exploratory study on the psychological distress of critically ill patients. The study was conducted

in a polyvalent ICU located at a University General Hospital (Spain).

## Participants

The sample was made up of 71 critically ill patients. Initially, our aim was to include all the patients admitted to the ICU during one year considering different exclusion criteria (Table 1).

Table 1. Exclusion criteria

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- a) Aged under 18 years old.
  - b) An expected short stay in ICU or high probability of favourable medical outcomes. This implies to exclude those patients admitted only for postoperative control after scheduled high-risk interventions, with an ICU stay below 48 hours.
  - c) Patients in a state of coma, sedated or with verbal communication problems, such as cases of intubation or cognitive impairment. It was also an exclusion criterion not to understand the Spanish language.
  - d) Meeting medical criteria which militate against intervention with the patient, from simple interaction to the evaluation itself.
  - e) Patients with a psychological disorder diagnosed recently that could interfere the assessment and mask the possible psychological effects derived from the income in the ICU.
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From consecutive admissions and taking into account different factors, such as the mortality rate, the voluntariness, etc., and the exclusion criteria, a total of 71 patients were included in the study (Figure 1). The mean age was 54.07 ( $SD = 17.31$ ). Table 2 shows the main demographic and clinical characteristics of the final sample.

## Procedure

After the approval by the Clinical Research Ethics Committee of the Hospital and in order to identify a priori those critical patients that may participate in the study, a psychologist of the research team attended ICU clinical sessions daily. All potential participants were informed about the objectives/characteristics of the study as well as the voluntary participation, anonymity and confidentiality of data collected. It was necessary to obtain the informed consent to carry out the assessment. After confirming that the patients met criteria for inclusion in the study, the psychological evaluation was made by a psychologist specially trained in this area who encouraged an atmosphere of confidence and security. The study has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

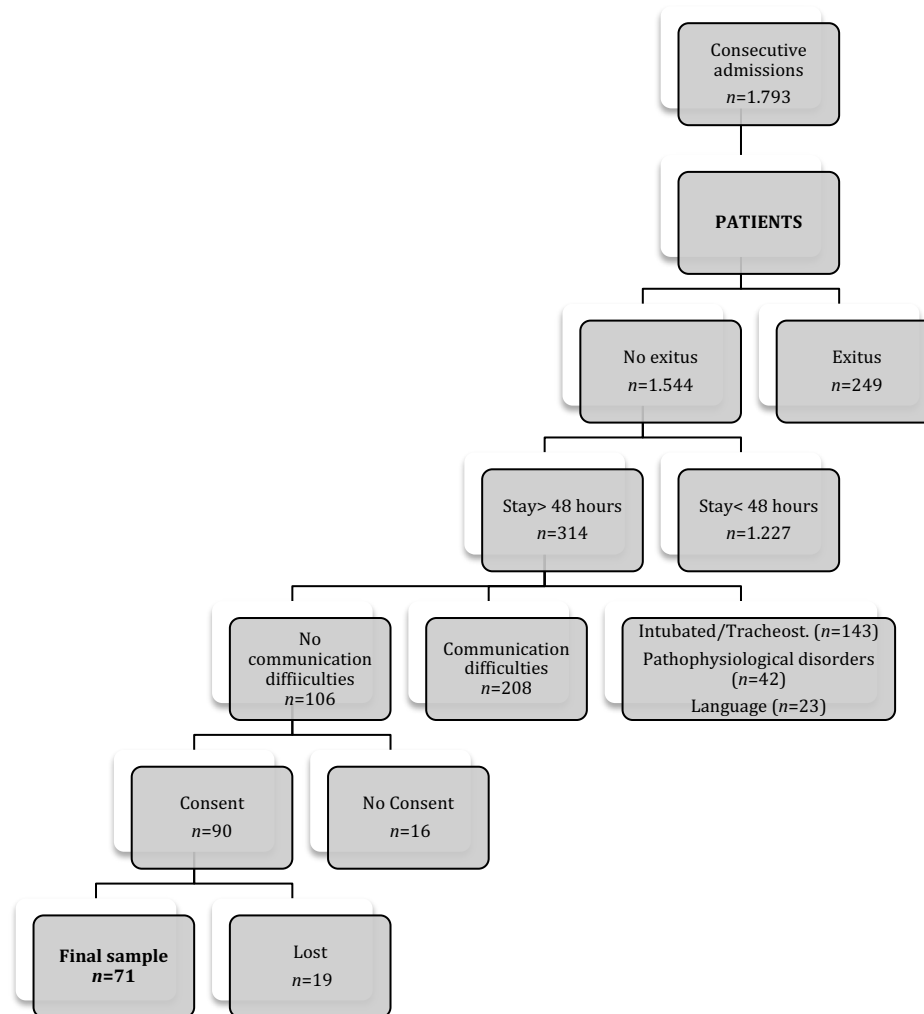


Figure 1. Final sample of patients.

### Instruments

Data related to demographic characteristics were collected in a record sheet designed for that purpose. It included age, gender, marital status, educational level, offspring, and clinical pathology. Enrolled patients were additionally administered the following instruments in order to obtain psychological data:

*The Hospital Anxiety and Depression Scale (HADS)* (Zigmond & Snaith, 1983; Spanish version by Tejero, Guimerá, Farré, & Peri, 1986). The HADS is a screening questionnaire used to measure anxiety (7 items) and depression (7 items). It has a 4-point scale for each item (range 0-21). Scores between 8-10 indicate possible clinical disorder; scores  $\geq 11$  indicate probable clinical disorder. This questionnaire also has established good reliability and validity (Herrero et al., 2003; Quintana et al., 2003; Zigmond & Snaith, 1983). In our study,

the Cronbach's alpha for HADS-anxiety and HADS-depression was .83 and .89, respectively.

*The State-Trait Anxiety Inventory (STAI)* (Spielberger, Gorsuch, & Lushene, 1983; Spanish version by Seisdedos, 1988) is a commonly used measure of trait-state anxiety. This inventory is based on a 4-point Likert scale and consists of 20 items for assessing each scale (trait/state anxiety). The scores range between 0-60 in each scale and higher scores indicate greater anxiety. The internal consistency ranges .83-.92 and the test-retest reliability coefficient obtained by Spielberger et al. (1983) was also high ( $r = .81$ ). In our study the Cronbach's alpha for STAI was .91.

*The Beck Depression Inventory (BDI)* (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Spanish version by Sanz & Vázquez, 1998) is a 21-item measure of symptoms and attitudes related to cognitive, behavioural, affective and somatic components of depression consisting of four

Table 2. Demographic characteristics of total study sample

Demographics		Patients ( $n = 71$ )	
		M	SD
Age		54.07	17.31
		<i>N</i>	%
Gender	Male	52	73.2
	Female	19	26.8
Educational level	No studies	4	7.7
	Primary school	35	67.3
	High school	10	19.2
	University	3	5.7
Marital status	Married/domestic partnership	36	70.6
	Single	15	29.4
Offspring	Yes	32	84.2
	No	6	15.8
Clinical pathology	Coronary	27	39.7
	Medical illness	14	20.6
	Septic	7	10.3
	Respiratory	7	10.3
	Traumatism non operated (without CNS)	7	10.3
	Traumatism non operated (CNS)	4	5.9
	Neurosurgical	2	2.9

Note. CNS = Central nervous system

statements rated from 0-3 in terms of severity. Cut-off scores are used to evaluate the subject's responses. A total score < 10: no or minimal depression; 10-18: mild-moderate depression; 19-29: moderate-severe depression; and > 30: severe depression (Beck, Steer, & Carbin, 1988). It has well-established psychometric properties (Beck et al., 1988; Lasa, Ayuso-Mateos, Vázquez-Barquero, Díez-Manrique, & Dowrick, 2000). In the present study, Cronbach's alpha for the BDI was .89.

*The Mood Scale* (Ballester-Arnal & Gil-Juliá, 2012) was developed by the own ICU psychologists in order to easily assess the patient's subjective perception of mood. It consists of three items that are answered following a visual analogue scale ranging from 0-10, which assess general psychological distress, anxiety and depressed mood (e.g., «Please, indicate on a scale of 0 to 10 to what extent you are presenting right now general psychological distress»). In our study the internal consistency for the mood scale was 0.79.

*The ICU Stressors Scale* is an adaptation to the context of ICU of the Hospital Stressors Scale developed by Richart, Cabrero and Reig (1993). In this adaptation (Ballester-Arnal & Gil-Juliá, 2012), we have included the original scale items, and new ones from the literature reviewed (López, Pastor, Rodríguez, Sánchez, & Belmonte, 1990; Volicer, & Bohanon, 1975) and the clinical experience of ICU professionals, in order to assess the degree of stress generated by various factors associated with ICU. The questionnaire consists of 40 items and the responses are scored according to a Likert scale (0-4). The higher the score, the higher level of stress. In our study the internal consistency (Cronbach's alpha) for this adaptation was .95.

### Statistical analyses

All statistical analyses were performed using SPSS 24.0. To describe the basic characteristics of the sample, descriptive and frequency analyses were used, including in these analyses sociodemographic variables and others related to the emotional distress of critical patients. Likewise, we studied the relationship between different sociodemographic and clinical variables with the psychological distress of critically ill patients in terms of anxiety, depression, subjective perception of distress and levels of stress. For this purpose, the Pearson and Spearman correlation coefficient, the Student's *t*-test and analysis of variance (ANOVA) were used, depending on the type of variable and the number of subgroups compared. Finally, a multiple linear regression analysis was performed to explore which variables present more influence on the emotional distress of patients. The reference categories for the dummy variables were: man (for sex); single (for marital status variable); and coronary patient (for ICU admission pathology). The statistical significance was given by a *p*-value  $\leq 0.05$ .

## Results

### Descriptive results

In relation to anxiety symptoms, patients' mean anxiety score measured by HADS is 7.09 ( $SD = 5.29$ ). Most of patients (60%) show a mean score included in the normal range. Nevertheless, the rest of the patients' scores would be just suggestive of the presence of anxiety disorder (20%) and indicative of the presence of the disorder (20%). In terms of trait and state anxiety (STAI) the mean score is 13.77 ( $SD = 9.97$ ) and 17.08 ( $SD = 11.37$ ) respectively. According to this scale, the state anxiety mean would

correspond to the 42 percentile for men and 35 percentile for women. And the trait anxiety mean would correspond to the 22 percentile for men and 13 for women.

Regarding depression symptoms, the HADS shows a mean score of 7.22 ( $SD = 5.86$ ). This value implies that 60% of patients' mean score would be in normal range, 12.9% would be just suggestive of the presence of depressive disorder and a high percentage (27.1%) would be indicative of the presence of the disorder. According to the BDI, the patients' mean score is 12.94 ( $SD = 9.68$ ) what is considered mild-moderate depression. In terms of percentages, these results show absence of depression in 43.8%, mild depression in 33.3%, moderate depression in 18.8% and major depression in 4.2% of patients.

Another relevant issue is the patients' subjective perception of emotional distress ranged from 0-10. The patients' general perception mean of distress is 4.37 ( $SD = 2.98$ ) followed by the anxiety ( $M = 2.89$ ;  $SD = 3.03$ ) and the depression subjective perception ( $M = 2.26$ ;  $SD = 2.92$ ). With respect to the stress, patients show an overall stress level of 1.72 ( $SD = 1.24$ ) scored between 0-4. In terms of percentages, 57.4% of critically ill patients reveal an intermediate general stress level; 28% indicate that their income in ICU is very stressful; whereas only 15% consider the experience as no stressful.

Analysing different stressors in the ICU, ordered by mean scores, patients highlight as the five most important stressors: having pain (58.5%), being bedridden (49.2%), not getting relief from pain even taking medication (41.5%), using a bedpan (50%) and not being with the closet relatives (32.8%). In contrast, factors such as being cared for by unfamiliar health professionals (86.9%), being aware of unusual smells (73.3%), having too many visits (73.2%), eating at unusual hours (71.2%), thinking about the possible loss of money caused by disease (72.2%) and sleeping next to other patients in the same ward (68.9%) were considered as non-stressful at all.

#### *Modulating role of socio-demographic and clinic variables on the psychological distress*

When examining the influence of certain demographic variables on the emotional distress of patients there are no statistically significant differences by gender in anxiety, depression and subjective perception, excepting trait anxiety ( $t = -2.14$ ;  $p = .038$ ), which as expected is higher in women. Almost significant differences have been found in general stress ( $t = -1.95$ ;  $p = .056$ ) and the stress caused by not being with the closet relatives ( $t = -1.92$ ;  $p = .060$ ) with higher mean scores in women.

Regarding the marital status there are no statistically significant differences in anxiety, depression and

subjective perception. However, the differences have been significant in general stress ( $t = 2.67$ ;  $p = .011$ ) and other stressors associated to the ICU such as being bedridden ( $t = 2.18$ ;  $p = .035$ ), not knowing when they will be discharged from ICU ( $t = 2.22$ ;  $p = .032$ ) and having been admitted to the ICU suddenly ( $t = 2.47$ ;  $p = .019$ ). These factors show higher mean scores in those patients without partner (singles, divorced and widows/widowers).

Analysing the differences by have or not having offspring, there are no statistically differences in anxiety, depression, subjective perception and general stress. Nevertheless, the differences are significant in the level of stress caused by needing help for relieve oneself ( $t = -2.41$ ;  $p = .025$ ), which is more stressful for patients with sons/daughters; thinking about the possible loss of money because of the disease ( $t = 2.48$ ;  $p = .020$ ); and feeling strange smells ( $t = 2.74$ ;  $p = .011$ ). In the last two factors the differences are in favour to those patients without offspring.

According to the ICU admission pathology, no statistically differences have been found in anxiety, depression and subjective perception. These differences are statistically significant in general stress ( $F = 2.67$ ;  $p = .025$ ) and other stressors associated to the ICU as follows: sleeping in a bed that is not yours ( $F = 2.69$ ;  $p = .024$ ); eating in bed in an uncomfortable position ( $F = 2.78$ ;  $p = .020$ ); having too many visitors ( $F = 3.16$ ;  $p = .011$ ); being all the time naked, covered with a sheet ( $F = 2.70$ ;  $p = .023$ ); hearing constant noises ( $F = 7.69$ ;  $p = .000$ ); lights turned on all day ( $F = 13.06$ ;  $p = .000$ ); not knowing what the disease is ( $F = 3.39$ ;  $p = .008$ ); not knowing when he/she will be discharged from ICU ( $F = 4.04$ ;  $p = .002$ ); thinking about experiencing pain because of an operation/medical test ( $F = 2.86$ ;  $p = .020$ ); not knowing when doctors/nurses will do things to them ( $F = 2.68$ ;  $p = .026$ ); health professionals talk fast or use words that patients cannot understand ( $F = 2.65$ ;  $p = .029$ ); not receiving the pain relief medication as needed ( $F = 3.52$ ;  $p = .009$ ); feeling strange smells ( $F = 2.54$ ;  $p = .031$ ); and eating at other times ( $F = 12.49$ ;  $p = .000$ ). In order to analyse these results deeply a Scheffé test has been performed which shows that certain mean scores differ significantly (Table 3).

When analysing possible correlations between demographic variables and the emotional distress of patients, neither age nor educational level show statistically significant correlations with anxiety, depression, subjective perception of psychological distress and level of stress. However, the relation between educational level and some stressors such as being hospitalized far from home ( $r = .35$ ;  $p = .028$ ) and being cared for by unfamiliar



Table 3. Stressors in ICU: differential analysis by pathology

Item	Pathology							<i>F</i>
	Cor <i>M (SD)</i>	MI <i>M (SD)</i>	Neuro <i>M (SD)</i>	Sept <i>M (SD)</i>	Resp <i>M (SD)</i>	CNS Tr <i>M (SD)</i>	Non CNS Tr <i>M (SD)</i>	
4. To sleep in a bed that is not yours	1.12 (1.57)	0.70 (1.06)	2 (1.41)	2.86 (1.68)	0.67 (1.21)	2.33 (2.08)	0.33 (0.82)	2.69*
9. To eat in bed in an uncomfortable position	1.08 (1.22)	0.67 (1.12)	0.50 (0.71)	2.86 (1.07)	1.83 (1.33)	1 (1.72)	1 (1.41)	2.78*
12. To have too many visitors	0.41 (0.79)	0.30 (0.67)	0	1.83 (1.83)	0	0	0.33 (0.52)	3.16*
13. To be all the time naked, covered with a sheet	0.67 (1.20)	0.70 (1.34)	2 (1.41)	1.14 (0.69)	2.50 (1.64)	2.67 (2.31)	1 (1.15)	2.70*
16. To hear constant noises	0.24 (0.52)	0.90 (1.19)	3 (1.41)	3 (1.53)	1.5 (1.52)	1 (1)	1.14 (1.34)	7.69***
17. Lights turned on all day	0.33 (0.64)	0.22 (0.67)	3 (1.41)	3.29 (0.95)	2 (1.41)	0.67 (1.15)	1.57 (1.39)	13.06***
21. Not to know what the disease is	1.12 (1.32)	1.44 (1.74)	3 (1.41)	3.67 (0.52)	2.67 (1.50)	1.33 (1.53)	1.57 (1.27)	3.39**
27. Not to know when he/she will be discharged from the ICU	0.68 (0.90)	1.33 (1.58)	3.50 (0.71)	2.57 (1.39)	2 (1.41)	2.33 (1.15)	2 (1.73)	4.04**
30. To think about he/she may have pain because of an operation or medical test	1.20 (1.19)	1.14 (1.46)	2 (2.83)	3 (1.15)	2.60 (1.14)	2 (1.73)	2.80 (0.84)	2.86*
31. Not to know when doctors/nurses will do things to them	0.48 (0.68)	1 (1.05)	2.50 (0.71)	1.67 (1.21)	2 (1.58)	1.33 (1.53)	1.50 (1.64)	2.67*
34. Health professionals talk fast or use words that patients cannot understand	0.44 (0.62)	0.60 (1.07)	2.50 (0.71)	2.25 (1.71)	1.20 (1.79)	1.67 (1.53)	1 (1.09)	2.65*
36. Not to receive the pain relief medication as needed	1.25 (1.06)	1.43 (0.98)	4 (0)	2.83 (1.83)	3.20 (1.09)	1 (–)	2.75 (1.26)	3.52**
38. To feel strange smells in the hospital	0.08 (0.28)	0.50 (1.27)	1.50 (2.12)	1.43 (1.39)	0.40 (0.89)	0.33 (0.58)	0.71 (1.11)	2.54*
39. To eat at other times	0.04 (0.20)	0.22 (0.44)	3.50 (0.71)	1 (1.41)	0.33 (0.52)	0	1.43 (0.98)	12.49***
40. General stress	1.20 (1)	1.60 (1.17)	2.50 (0.71)	2.86 (0.89)	2.33 (1.63)	2 (1)	1.43 (1.27)	2.67*

Note. CNS = Central nervous system; Cor = Coronary; MI = Medical illness; Neuro = Neurosurgical; Sept = Septic; Resp = Respiratory; CNS Tr = Traumatism CNS; Non CNS Tr = Traumatism without CNS. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Scheffé: Item 16: Sept > MI, Cor; Item 17: Sept, Neuro > Cor, MI, Sept > CNS Tr; Resp > Cor; Item 21: Sept > Cor; Item 39: Neuro > Cor, MI, Sept, Resp, CNS Tr, Non CNS Tr; Non CNS Tr > Cor.

health professionals ( $r = .35$ ;  $p = .021$ ) was positive and statistically significant.

Finally, in order to find potential predictors for psychological distress a multiple linear regression

analysis was performed with anxiety, depression and general stress level scores as dependent variables and demographic (age, gender, educational level, marital status) and clinical variables (income pathology) and

Table 4. Multiple linear regression analysis of variables associated to the presence of psychological distress

Independent variables	Dependent variables					
	Anxiety		Depression		General stress	
	Beta [95% CI]	p value	Beta [95% CI]	p value	Beta [95% CI]	p value
Age	.045 [-.056; .146]	.369	.082 [-.039; .202]	.177	-.044 [-.067; -.020]	.001
Gender-Woman	14.090 [7.661; 20.520]	.000	14.166 [6.512; 21.819]	.001	1.187 [.048; 2.326]	.042
Marital status-Married	-4.878 [-8.735; -1.020]	.015	-.583 [-5.174; 4.009]	.798	-.466 [-1.355; .424]	.293
Income pathology-Septic patient	-5.337 [-12.210; 1.537]	.124	-4.939 [-13.121; 3.244]	.229	1.389 [.082; 2.696]	.038
Income pathology-Medical illness	.204 [-4.923; 5.331]	.936	-1.693 [-7.796; 4.410]	.577	-1.274 [-2.561; .013]	.052
Income pathology-Non-operated traumatism CNS	3.586 [-3.337; 10.509]	.300	-1.974 [-10.216; 6.267]	.630	-.465 [-1.834; .904]	.493
Gender X Medical illness	-13.577 [-22.212; -4.942]	.003	-16.887 [-27.166; -6.608]	.002	Not in model	
Gender X Non-operated traumatism CNS	-13.647 [-24.674; -2.620]	.017	-9.668 [-22.795; 3.459]	.144	Not in model	

Note. X= Interaction; CNS = Central nervous system.

Model  $R^2$ : Anxiety: .545 ( $p=.009$ ); Depression: .491 ( $p = .032$ ); General stress: .613 ( $p = .001$ )

the interaction between gender and income pathology as independent variables (Table 4). In relation to anxiety, results show that all the cited independent variables explain 54.5% of the variance ( $p = .009$ ). Concretely, being woman is associated with increased risk of experiencing anxiety ( $p = .000$ ) and being married ( $p = .015$ ) seems to protect against suffering from anxiety. Considering the interaction gender-ICU admission pathology results reveal that being woman and suffering from a medical illness ( $p = .003$ ), and being woman and patient with a non-operated central nervous system (CNS) traumatism ( $p = .017$ ) seem to protect of experiencing anxiety. Regarding depression symptoms, results show that all independent variables and the interaction gender-pathology explain the 49.1% of the variance ( $p = .032$ ). In particular, being woman could be considered as a risk factor to the extent that it is associated with increased depression symptomatology ( $p = .001$ ). By contrast, the interaction being woman and suffering a medical illness ( $p = .002$ ) is associated with lowered total depression score. The results related to the general stress level including all the independent variables show a model which explains the 61.3% of the variance ( $p = .001$ ) not being statistically significant the change added by the interaction gender-ICU admission pathology. On this point, being younger seems to reduce the level of general stress ( $p = .001$ ). On the other hand, being woman ( $p = .042$ ) and septic patient ( $p = .038$ ) are associated with increased general stress experience.

## Discussion

Our study yielded some noteworthy results regarding the real distress experienced by patients during their ICU stay. In terms of anxiety and depression, patients showed anxiety and depression symptoms although in a moderate level. However, it is important to take into consideration the percentage of patients with clinical symptoms (20% anxiety; 23-27% depression). According to previous studies, and especially in the case of depression, the values obtained were even higher (Gil, Ballester, Gómez, Ruiz, & Giménez, 2010; Rincon et al., 2001).

Related to the patients' subjective perception of distress we found higher scores on patients' general distress perception than on anxiety and depression subjective perception. Anxiety and depression subjective perception scores were lower than data obtained in a previous study (Li & Puntillo, 2006). Moreover, self-reported mood was consistent with the actual psychological distress assessed previously and related to anxiety and depression symptoms as stated in other studies (Gil-Juliá, Bernat-Adell, Collado-Boira, Molés-Julio, & Ballester-Arnal, 2018).

It is also worth noting that emotional outcomes were better than the expected ones. This fact may be influenced by different factors such as the shock experienced by patients in this extreme situation, not being fully aware of the reality; or because of the use of avoidant coping strategies as transitional defence mechanism to cope with

the impact of ICU admission; or maybe at this moment the patient is only focused on physical issues and not on emotional ones. Even, the explanation of patient's moderate distress may be simpler and based on the wide trend to victimize the ill person when in fact he may have sufficient resources to cope with adaptively in line with previous authors who even found perception of positive changes on patients who had just suffered a first cardiac event (Sanjuán, García-Zamora, Magallares, Arranz, & Castro, 2017).

Additionally, differences in anxiety and depression by demographic and clinical variables were not significant. However, we observed a higher anxiety trend in women. These data confirm the results obtained in a preliminary study (Gil et al., 2010), and would be in line with previous studies (Pesce et al., 2016; Rattray, Johnston, & Wildsmith, 2005; Wörfel, Gusy, Lohmann, Töpritz, & Kleiber, 2016).

Regarding to the stress associated with ICU admission, more than half of patients reported intermediate levels of general stress, in line with prior studies (Dziadzko, Dziadzko, Johnson, Gajic, & Karnatovskaia, 2017) while for about one-third the overall experience was very stressful. The main stressors identified by patients were those related to the direct consequences of the disease itself (e.g. having pain and being in bed or sitting on the couch all day), as well as others related to the relational/emotional factors (e.g. not being with his closest relatives). Similar results were obtained in previous studies especially considering the pain among the most stressful factor (Ballester et al., 2006; Dias et al., 2015; Gültekin, Özçelik, Akıncı, & Yorgancı, 2018; Hweidi et al., 2015).

Reflecting further on the perceived stress experienced by ICU patients, significant differences were found by marital status and pathology. A higher degree of overall stress was observed in patients without partner, which leads us to consider the spouse's support as relevant in these circumstances, although in other health problems it seems not to be so clear (Angulo, Reales, Sandín, & Santed, 2019). Likewise, differences found by pathology revealed that septic patients had higher levels of stress. In this regard, we note that general sepsis diagnosis sometimes is associated to even greater degree of uncertainty than other diagnoses given the global impairment experienced, which undoubtedly contributes significantly to the perception of stress, in line with other authors (Granja et al., 2005).

Finally, this study takes a step forward to highlight those risk and protective factors for psychological distress in critically ill patients. Particularly, being woman increased the risk of experiencing anxiety, depression and general stress in this context. Likewise, another variable that increased the general stress perceived is

being a septic patient. It is also worth mentioning that some variables could be considered as protective factors in ICU. In this sense, being married tends to decrease anxiety symptoms. Similarly, different interactions seem to protect of experiencing anxiety, for instance, being woman-and-suffering from a medical illness, and being woman-and-patient with a non-operated traumatism (CNS). Regarding depression, the interaction being woman-and-suffering from a medical illness seems to be a protective factor. Likewise, being younger is associated with reduced level of general stress.

These data provide a landscape of the distress experienced by critically ill patients while they are still in ICU, including risk and protective factors of such distress, which is really important in order to optimize the attention of patients in a context where the time available to intervene is rather scarce.

### *Conclusions*

Our study let us to know the emotional impact of patients in an ICU providing relevant information about clinical psychological variables such as anxiety, depression and stress levels associated with the hospitalization in this context. Given the lack of studies about these matters with patients while they are still in ICU, especially because of the special difficulty of evaluating seriously ill patients, these data take a step towards filling this knowledge gap by highlighting the main issues involved and supplying the health care professionals with valuable information, such as risk and protective factors of psychological distress, in order to minimize the impact and maximize the global well-being of patients in the context of an ICU.

### *Limitations*

One possible study limitation was the sample size, which has been influenced by the difficulty of collecting patients' data in the context of an ICU. It is worth emphasizing the lack of work carried out with critically ill patients especially while they are still in the ICU and particularly those studies that analyse differences in the psychological distress experienced depending on sociodemographic/clinical variables. No studies related to predictors of psychological distress in patients admitted to an ICU were found, making difficult to compare our results.

### **Conflicts of interest**

The authors have no conflicts of interest to declare.



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